SHREYAS KAMATH KALASA MOHANDAS

shreyaskamathkm@gmail.com | GitHub | LinkedIn | Scholar

SKILLS

AI Expertise	Multimodal & VL Models (CLIP, SIGLIP-2, Amazon Nova) | Generative AI (Diffusion, GANs) | Transformers | Self-Supervised Learning | Classical ML & CNNs | Model Optimization (Quantization, Pruning, ONNX)
Computer Vision	Object Detection & Tracking | Semantic Segmentation | Monocular Depth Estimation | Motion Detection
Libraries	PyTorch & Lightning AI | TensorFlow & Keras | Ray (Distributed Computing) | OpenCV | NumPy | pandas | scikit-learn | pytest & unittest
Tools	AWS (SageMaker, EC2) | Voxel51 | HPC | Docker | Singularity
Languages	Python | MATLAB | C | C++ (basic) | Bash (basic)

PROFESSIONAL EXPERIENCE

Senior Machine Learning Engineer— SimpliSafe, Boston, MA   June 2025 — Present

- Enabled SigLIP 2 and CLIP training by producing 400k curated text–image pairs via an Agentic AI-based prompt-generation workflow built with Strands SDK to prompt the Amazon Nova model
- Developed a POC for a semantic search system using foundational models (Amazon Titan) to enable users to identify unique scenarios and receive custom notifications
- Accomplished a 60% reduction in computation time as measured by pipeline runtime metrics by architecting a distributed ETL pipeline leveraging Ray Data's streaming execution for high-throughput preprocessing

Computer Vision Engineer – II — SimpliSafe, Boston, MA   July 2023 — June 2025

- Designed a video summarization system using Amazon Nova models to help monitoring agents quickly review footage during events, reducing manual review time by 60% and improving operational efficiency
- Reduced false positives in motion alerts by 90%, enhancing user experience and system reliability, by designing and implementing optimized frame-difference algorithms
- Achieved a 23% increase in nighttime event filtering accuracy and a 13% increase in 24/7 event filtering accuracy by releasing a new object detection model on cloud
- Automated key frame detection, cutting manual review time by 40%, by architecting a smart sampling system that streamlined video processing workflows
- Accelerated AI model deployment by 30% by leveraging Voxel51 tool-based model evaluation, enabling real-time data-driven decisions for senior leadership
- Developed and deployed a distributed YOLO-R training pipeline on Ray, assessing its efficiency and scalability, which led to company-wide adoption of Ray for large-scale data preprocessing and ML training systems

Computer Vision Engineer – I — SimpliSafe, Boston, MA   January 2022 — July 2023

- Enhanced person and pet detection accuracy by 5% (mAP) on edge devices through advanced augmentation and hyperparameter tuning in PyTorch
- Reduced model memory usage by 50% and inference latency with 0.8% mAP drop, applying model quantization and compression for edge deployment using PyTorch, ONNX, and NNI
- Designed region-of-interest-aware YOLO models in PyTorch that improved edge model performance by 11%, leading to Patent No. US11,922,669
- Boosted test coverage by 60% by automating unit tests with pytest and unittest, streamlining QA processes

Computer Vision & Deep Learning Intern — Raspican AS&E, Billerica, MA   May 2019 — August 2019

- Improved contraband detection in X-ray scans by 5% by developing a Mask-RCNN model using Keras and TensorFlow, enhancing system accuracy and reliability

• Increased dataset diversity by 40% and reduced overfitting by developing a Conditional GAN to generate synthetic contraband images, improving model robustness and accuracy

Graduate Research Assistant — Tufts University, Medford, MA   September 2016 — January 2022

• Reduced cost and manual effort for researchers at the Nutrition school by developing a pipeline using OpenCV, & PyTorch, leveraging FTNet for segmentation, DTTNet for depth estimation, & MLP for calorie estimation

• Reduced deep learning model engineering time by 8x on HPC clusters by developing a distributed pipeline with Lightning AI, PyTorch, and Singularity containers, accelerating model prototyping by 50%

EDUCATION

Doctor of Philosophy in Electrical and Computer Engineering, Tufts University   Feb 2022

Master of Science in Electrical and Computer Engineering, The University of Texas at San Antonio   May 2016

PATENTS

Granted Patents

• Object detection via regions of interest. U.S. Patent No. US 11,922,669, issued 5 March 2024

• System and Method for Multimedia Analytic Processing and Display. U.S. Patent No. 11,450,087, issued 20 Sep. 2022

PUBLICATIONS

A representative sample of the most relevant articles from a total of 22 papers

• Karen Panetta, Qianwen Wan, Sos S. Agaian, Srijith Rajeev, **Shreyas Kamath KM**, et al. "A comprehensive database for benchmarking imaging systems." IEEE Transactions on Pattern Analysis and Machine Intelligence, 2018.

• Karen Panetta, **Shreyas Kamath KM**, Shishir Rao, and Sos S. Agaian, "Deep Perceptual Image Enhancement Network for Exposure Restoration." in IEEE Transactions on Cybernetics, 2022.

• Karen Panetta, **Shreyas Kamath KM**, Srijith Rajeev, and Sos S. Agaian, "FTNet: Feature Transverse Network for Thermal Image Semantic Segmentation." in IEEE Access, 2021.

• **Shreyas Kamath KM**, Srijith Rajeev, Karen Panetta, and Sos S. Agaian. "DTTNet – Deep Transverse Network for monocular depth estimation." Multimodal Image Exploitation and Learning 2022. SPIE, 2022.

• **Shreyas Kamath KM**, Rahul Rajendran, Qianwen Wan, Karen Panetta, and Sos S. Agaian . "TERNet: A deep learning approach for thermal face emotion recognition." In Mobile Multimedia/Image Processing, Security, and Applications 2019, SPIE 2019.